METHODS OF PROTECTION (PELLETING) OF NITROGEN FERTILIZERS

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To receive heavy yields various types of fertilizers are applied in modern agriculture. First of all these are mineral fertilizers including nitrogenous, phosphorous and potassium ones.

Nitrogenous fertilizers give plants growth and green herbage but also they have some disadvantages. One of them is quick outgoing of nitrogen out of ready product grain. This can be followed by accumulation of nitrates in plant fruits, their leaves and thighs. The solution of this problem can be in covering of grains with protective coat. This will decrease nitrogen-to-soil penetration rate and improve quality of ready agricultural product.

There are several approaches in technology of receiving slowly dissolved fertilizers. The main of them are:

The Work provides the covering method of mineral fertilizers which assures gradual outgoing of nutrients and improves the balance and conditions of plant nutrition during land application. This method has the following advantages:

1. has natural origin that is not injurious to soil microorganisms and human with harvest cultivated by means of these fertilizers;
2. creates the protective coat at grain surface through which the moisture from soil enters the grain and forms inside grain the nutritious solution that can come out of grain;
3. has significant hardness and strength, does not split off the grain during transportation and pouring;
4. is accessible and has small estimated cost.

The following issues were determined in the Work:

1. There was justified the appropriateness of application of organic wastes as a covering to provide decreasing of nutrients outgoing out of nitrogenous mineral fertilizers.
2. The growth mechanism of organic suspension grains in fluidized bed was determined.
3. Four modes of grain growth typical for organic suspension granulation in fluidized bed were specified.
4. Physical model of coating process was designed.
5. The technology of production of granulated sustained action nitrogenous fertilizers with coat of cheap organic material was developed.
6. The proposed technology has ecological effect because it prevents emissions of untreated animal wastes to surface water and does not litter soil with biogenic matters.